



Perception of Physical Education Teachers in the Use of Artificial Intelligence Media in the Learning Process

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Authors' contribution: A) Conception and design of the study; B) Acquisition of data; C) Analysis and interpretation of data; D) Manuscript preparation; E) Obtaining funding

ABSTRACT

This study uses a qualitative approach with phenomenological design. The subjects of the study are physical education teachers from junior high school (SMP) and high school (SMA) who have experience or understanding of the use of technology, including AI-based media, in the learning process. Subjects were selected using purposive sampling techniques, which are based on certain criteria, such as having at least 3 years of experience teaching physical education, having used or having basic knowledge of AI-based media in learning, and being willing to participate in research. Qualitative data was collected through interviews. In conclusion, the use of AI technology in physical education learning has great potential to improve the quality of learning, but there are still many challenges that must be overcome. With the support of infrastructure, technological literacy, and the right policies, AI can be an important innovation that supports physical education teachers in facing the demands of the digital era.

ARTICLE HISTORY

Received: November, 2024

Accepted: December, 2025

Publish: January, 2025

KEYWORDS

Perception;
Teachers;
Artificial Intelligence;
Physical Education

How to Cite : Syafruddin, M. A., & Ikadarny. (2025). Perception of Physical Education Teachers in the Use of Artificial Intelligence Media in the Learning Process. *Journal RESPECS (Research Physical Education and Sport)*, 7(1), 23–31. <https://doi.org/10.31949/ijsm.v7i1.12940>

INTRODUCTION

Technological advances in recent decades have brought significant changes in various aspects of life, including in the world of education (A. Syafruddin, 2023). One of the innovations that has begun to be widely discussed is the use of Artificial Intelligence (AI) in the learning process. AI provides great opportunities to support various educational activities, both in terms of material delivery, learning personalization, and evaluation of student achievements (Hooda et al., 2022). However, the adoption of this technology still faces challenges, especially in the field of physical education, where the learning process often involves physical activities that are difficult to replace with digital technology (Almusawi et al., 2021).

Physical education has unique characteristics compared to other subjects. Its activities focus more on the formation of motor skills, the development of physical fitness, and the strengthening of the values of cooperation, sportsmanship, and discipline (M. A. Syafruddin



et al., 2022). Therefore, the role of teachers in guiding and directing students during physical activity is very important. On the other hand, with the development of AI technology, there is a potential to increase the effectiveness of physical education learning through digital media, such as movement analysis applications, AI-based fitness evaluation tools, and interactive learning tools.

Although AI technology offers various benefits, the perception of teachers as learning managers is a key aspect in the implementation of this technology. Teachers' perceptions greatly affect whether a technological innovation is accepted and integrated into the learning process. Teachers who have a positive view of the use of AI tend to be more motivated to learn and utilize the technology (Chiu et al., 2024). Conversely, teachers who find AI difficult to use or irrelevant to their learning needs may be inclined to ignore it.

Many studies have revealed that the application of technology in education often faces obstacles stemming from the limitations of teachers' digital skills (M. A. Syafruddin, 2024). In the context of physical education, these challenges are increasingly complex due to the need to integrate technology with physical activity that involves direct movement (Lee & Lee, 2021). Teachers often feel that physical education learning is more effective in carrying out directly without the need to involve technological media which is considered to reduce physical interaction between teachers and students.

In addition to technical skills, another factor that affects teachers' perception of AI is the readiness of school infrastructure (Ayanwale et al., 2022). Not all schools have adequate access to advanced technology devices, such as motion sensors, AI cameras, or cloud-based applications that can support interactive learning. Teachers who work in schools with limited infrastructure may find it difficult to see the concrete benefits of AI technology in supporting learning (Kim & Kwon, 2023).

On the other hand, the development of AI-based applications specifically for physical education has shown great potential in improving the quality of learning. For example, motion analysis apps can help teachers evaluate student techniques more accurately, while AI-equipped wearables can monitor students' fitness levels in real-time. However, the use of this technology requires a good understanding from teachers to be able to interpret the data and provide appropriate feedback to students.

The success of the implementation of AI technology in physical education learning does not only depend on the sophistication of the technology itself, but also on the extent to which teachers feel comfortable and confident in using it. This confidence is often associated with adequate training and hands-on experience in using the technology. Therefore, special training programs for physical education teachers are crucial in supporting the wider adoption of AI technology.

In addition to training, teachers' attitudes and beliefs about the benefits of AI are also very important to pay attention to. If teachers feel that AI can help them manage learning more effectively and efficiently, they are likely to be more open to trying and utilizing this technology. However, if they feel that the use of AI will only add to the workload without providing a significant positive impact, the adoption of this technology may face obstacles.

The cultural context and education system in Indonesia also affect teachers' perception of technology. In some regions, the physical education learning approach is still very traditional, with a focus on physical activities that are carried out directly. In this context, the use of AI may be perceived as something less relevant or even inappropriate for local needs. Therefore, it is important to understand how teachers' perceptions are influenced by their cultural values and work environment.

Teachers' perception of AI is also influenced by the level of technological literacy of the community in general. In a society that has wide access to digital technology, teachers

tend to be more open to the use of AI. Conversely, in a society that is less familiar with technology, teachers may feel that the use of AI in learning is something too complicated or unrealistic.

The study of the perception of physical education teachers is also relevant in facing educational challenges in the post-pandemic era. During the COVID-19 pandemic, distance learning has become the main solution to ensure the continuity of education. In the context of physical education, this presents new challenges because physical activity is difficult to do online. AI technology has the potential to be a solution to overcome these challenges, for example through interactive simulations or video analysis of student movements carried out remotely.

However, not all teachers have had a positive experience during the use of technology during the pandemic. Many teachers feel overwhelmed by the sudden changes, including the need to master various digital platforms in a short period of time. This experience can influence how they view the use of AI technology in learning in the future. As part of education that continues to evolve, it is important to evaluate teachers' perceptions of the use of AI so that education policies can be designed more targeted. By understanding teachers' needs, concerns, and expectations, policymakers can develop programs that support technology adoption in a more inclusive and effective manner.

Research on physical education teachers' perceptions of AI can also provide insights into how to integrate technology with existing learning approaches. This integration not only involves technical aspects, but also involves changing teachers' perspectives on the role of technology in supporting the achievement of learning goals. In the global context, many developed countries have begun to integrate AI in physical education learning. Indonesia can learn from the experience of these countries, both in terms of technology development and teacher training strategies. However, this approach needs to be adapted to local conditions so that it can be accepted and implemented properly.

Finally, understanding the perception of physical education teachers towards AI is an important first step to creating a more innovative and adaptive learning ecosystem. By combining modern technology and traditional approaches, physical education learning is expected to provide a more meaningful and relevant experience for students. This will not only support the development of physical skills, but also prepare students to face the challenges of an increasingly digital world.

MATERIALS AND METHODS

This study uses a qualitative approach with phenomenological design. This approach was chosen to understand the experiences, views, and perceptions of physical education teachers towards the use of artificial intelligence (AI) media in learning. Phenomenology allows researchers to explore the participants' in-depth experiences in a specific context, namely physical education.

The subjects of the study are physical education teachers from junior high school (SMP) and high school (SMA) who have experience or understanding of the use of technology, including AI-based media, in the learning process. Subjects were selected using purposive sampling techniques, which are based on certain criteria, such as having at least 3 years of experience teaching physical education, having used or having basic knowledge of AI-based media in learning, and being willing to participate in research.

The research was conducted in several schools that have access to learning support technology, both in urban and rural areas. The selection of this location aims to obtain an overview of teachers' perceptions in various educational contexts.

Qualitative data was collected through interviews. The interviews were conducted in a semi-structured manner to explore the views, experiences, and challenges felt by teachers in using AI in physical education learning. These interviews involve a flexible guide of questions to explore relevant themes.

The main instrument in this study is the researcher himself, using interview guides and observation sheets as auxiliary tools. The interview guide is designed to direct discussions on key issues, such as teachers' understanding of AI and its potential in physical education learning, teachers' experiences in using AI-based media, obstacles or challenges in the use of AI, both in terms of technical, pedagogical, and infrastructure, and teachers' expectations and needs related to the integration of AI technology in learning. Data analysis is carried out inductively with the following stages:

- a. Data reduction: Raw data from interviews, observations, and documentation are selected, summarized, and grouped based on themes relevant to the research objectives.
- b. Data presentation: Reduced data is presented in the form of a descriptive narrative that describes teachers' perceptions, experiences, and challenges related to the use of AI.
- c. Drawing conclusions: Researchers draw conclusions based on patterns, relationships, and themes that emerge from the data. These results are then contextualized with the theory and findings of previous research.

RESULTS

To find out the perception of physical education teachers regarding the application of artificial intelligence in the learning process, an in-depth interview process was conducted. The results of the interview are as follows:

1. What is your understanding of Artificial Intelligence (AI) technology and its potential in the world of education, especially physical education?
 - a. Teacher 1's answer: "In my opinion, AI is a technology that allows machines to think and work like humans. In physical education, AI can help in analyzing students' movements, measuring fitness, or even providing automated feedback to students. But I myself am still new to understanding this."
 - b. Teacher 2's answer: "AI is an advanced technology that can be used to analyze data quickly. The potential is great, for example in evaluating students' sports techniques in real-time. However, I haven't seen much application of AI in the schools where I teach."
 - c. Teacher 3's answer: "I know AI can help learning be more personalized and efficient. In physical education, AI can be used to track students' physical activity. However, in our environment, AI still feels far away due to the limitations of facilities."
 - d. Teacher 4's answer: "I don't really understand AI yet, but I heard that AI can help in learning. In physical education, maybe AI can be used to monitor students' physical exercise."
 - e. Teacher 5's answer: "I think AI can provide more accurate analysis in sports, such as recording and analyzing students' sports movements. But I've never used technology like that."
 - f. Teacher Answer 6: "For me, AI is the technology of the future that can be used to help teachers make learning more interesting. In physical education, I think AI can support student performance evaluation, for example recording the speed or accuracy of movements."

- g. Teacher 7's answer: "I don't really understand AI technology, but I know that AI can help teachers in providing lessons more effectively, especially in terms of evaluation and analysis of movements."
 2. Have you ever used AI-based technology in the physical education learning process? If so, how was your experience?
 - a. Teacher Answer 1: "Never. I only use simple technology like videos or fitness apps. If it's AI, I've never tried it because I don't know how."
 - b. Teacher 2's answer: "I once tried the movement analysis application in training, but it was only limited to introduction. At school, I haven't had time to use it because of the limitations of the device."
 - c. Teacher 3's answer: "Never at all. We are still using the traditional way. I want to try, but the facilities are not supportive."
 - d. Teacher 4's answer: "Never. In our school, the use of technology is still limited, let alone AI. So there is no direct experience yet."
 - e. Teacher 5's answer: "I haven't used AI directly, but I've seen demonstrations of using AI-based fitness apps. It looks interesting, but I don't know how to integrate it yet."
 - f. Teacher 6's answer: "I have tried a step counter application that is said to be AI-based, but only for myself, not in learning. For students, I have never used it."
 - g. Teacher 7's answer: "Never. AI technology feels like something of a luxury to us in this area. There is no training or supporting facility yet."
 3. What benefits do you envision if AI technology is applied in physical education learning?
 - a. Teacher Answer 1: "I think AI can be helpful in providing more objective assessments, for example through movement analysis or recording student activities."
 - b. Teacher Answer 2: "AI can save teachers time, especially in student evaluation. We don't need to take manual notes or observe too much detail, because AI can do it."
 - c. Teacher 3's answer: "If AI is applied, students can be more motivated because technology makes learning feel more modern and interesting."
 - d. Teacher 4's answer: "I imagine AI can help me in measuring student fitness or providing more accurate statistical data."
 - e. Teacher 5's answer: "I think AI can be helpful in providing feedback to students directly. For example, if something goes wrong in their technique, the AI can immediately point out the error."
 - f. Teacher 6's answer: "The benefit is that it helps students understand the movements of the sport better because there is a visual analysis that they can see."
 - g. Teacher 7's answer: "I think AI can make it easier to manage student data, such as automatically recording their fitness."
 4. What barriers do you feel to integrating AI into physical education learning?
 - a. Teacher Answer 1: "The main obstacle is the facilities. In my school, simple technology is hard to come by, let alone AI."
 - b. Teacher 2's answer: "My own ability to use technology is an obstacle. I feel that I need training to be able to understand AI."
 - c. Teacher 3's answer: "I think the biggest obstacle is the cost. AI-based devices are certainly not cheap."
 - d. Teacher 4's answer: "The problem is the limited internet access in our area. If AI needs an internet connection, it's going to be difficult."
 - e. Teacher 5's answer: "I'm worried that students will focus more on their technology than on their physical activity."

- f. Teacher 6's answer: "Lack of time to learn new technologies is an obstacle. Teaching tasks are already quite dense, so it is difficult to learn new things."
 - g. Teacher 7's answer: "The biggest obstacle is the lack of support from the school in providing tools or training."
5. What do you expect from schools or governments to support the use of AI in physical education learning?
- a. Teacher Answer 1: "I hope the government provides special training on the use of AI in learning."
 - b. Teacher 2's answer: "The support of facilities such as AI-based tools or relevant applications is urgently needed."
 - c. Teacher 3's answer: "Hopefully, the government will provide funds to buy technological devices that can be used in learning."
 - d. Teacher 4's answer: "We need technical guidance and assistance so that we don't have difficulty integrating technology."
 - e. Teacher 5's answer: "I hope there are policies that encourage the integration of technology, including the provision of infrastructure."
 - f. Teacher 6's answer: "The hope is that there will be an additional curriculum or module that explains how to use AI in physical education."
 - g. Teacher 7's answer: "The support of a stable and cheap internet network is also very important to us."

DISCUSSION

This research reveals various perspectives of physical education teachers regarding the use of artificial intelligence (AI)-based media in the learning process. Based on interviews with seven physical education teachers, it was found that the understanding of AI technology is still mixed. Most teachers understand AI as a technology capable of helping with data analysis and providing automated feedback, especially in the context of sports. However, this understanding is generally general and not in-depth. This shows the need to improve technological literacy, especially in the field of AI, among physical education teachers.

The teachers' experience in using AI is also still very limited. Most teachers have never used AI-based technology in the learning process. Only a few teachers have a short experience, for example through training or the use of simple apps such as step counters or fitness analysis. This fact reflects that the application of AI in physical education learning has not yet become a common practice, especially in school environments with limited technological infrastructure (Demchenko et al., 2021). It also shows the gap between the potential of the technology and its practical implementation in the field.

The benefits imagined by teachers if AI is applied in physical education learning are quite diverse. Some teachers believe that AI can provide more objective and efficient assessments, such as real-time analysis of student movements, fitness measurements, and immediate feedback. Another teacher mentioned that this technology can simplify the evaluation and administration process, so that teachers can focus more on teaching. This hope shows that there is great potential for AI to improve the quality of physical education learning, both in terms of learning effectiveness and teacher work efficiency (Hsia et al., 2024).

While the benefits are acknowledged, teachers also face a number of barriers in integrating AI into learning. The main obstacle identified was the limited facilities and technological infrastructure in schools. Many schools, especially in rural areas, still experience obstacles in providing basic technology devices, especially AI-based technologies

that tend to be more complex and expensive. In addition, uneven internet access in some areas is also a significant obstacle to the application of AI-based technology.

On the other hand, personal barriers are also a concern. Many teachers feel less confident in using AI technology due to a lack of technical knowledge and skills. Some teachers admit that they need special training to understand how AI works and applies in learning. The lack of time to learn new technologies in the midst of a busy work schedule is also an additional challenge. This condition indicates the need for systematic efforts to increase the capacity of teachers in facing the demands of the digital era (Fernández-Batanero et al., 2022).

Another obstacle expressed by teachers is related to cost. Most AI-based technologies require considerable investment, both in terms of hardware and software. School budget constraints, especially in schools with limited resources, make AI integration a difficult challenge to realize. Teachers also mentioned the need for financial support from the government or related parties to ensure that this technology is accessible to all schools.

In addition to technical and financial barriers, some teachers are also concerned that the application of AI could shift students' focus from physical activity to technology. They emphasized that physical education should remain centered on physical activity and student health, so technology, including AI, should be used as a support, not a substitute for direct interaction between teachers and students. These concerns point to the need for a balanced learning design, where AI is used to reinforce, rather than reduce, the essence of physical education.

Teachers have various expectations for the government and schools in supporting the integration of AI in learning. They want comprehensive training to understand AI technology and its applications in physical education. In addition, teachers hope that the government can provide adequate technological devices and ensure stable and equitable internet access, especially in remote areas. This hope reflects the importance of the government's role in creating an inclusive technology ecosystem and supporting educational innovation.

Support from the school is also considered important. Teachers hope that schools can provide time and space for professional development, such as technology training and discussions on the application of AI. In addition, teachers also want internal policies that encourage the use of technology in learning, so that AI integration becomes part of school culture.

From this discussion, it can be seen that there is great potential to utilize AI in physical education learning. This technology can support data analysis, student assessment, and even more personalized learning design. However, the success of AI integration is highly dependent on infrastructure readiness, teacher technology literacy, and policy support from the government and schools (Yeter et al., 2024). Therefore, strategic steps are needed to overcome existing obstacles and maximize the potential of AI.

One step that can be taken is to introduce a specific AI training program for physical education teachers. The program should be designed to accommodate the practical needs of teachers, such as the use of AI-based applications relevant to physical education. This training can also include strategies for integrating technology effectively without sacrificing the primary goal of physical education.

In addition, the government and schools need to work together in providing adequate infrastructure. Increasing internet access, procurement of technological devices, and subsidies for the purchase of AI-based software are some of the steps that can be taken to support technology integration (Henttinen, 2021). This step will not only help teachers in learning, but also increase student engagement through more innovative learning.

Ultimately, the application of AI in physical education learning must consider the local context. Not all schools have the same resources, so a flexible and inclusive approach is needed. This technology must be adapted to the needs, conditions, and learning goals of each school, so that it can provide maximum benefits for teachers and students.

CONCLUSION

In conclusion, the use of AI technology in physical education learning has great potential to improve the quality of learning, but there are still many challenges that must be overcome. With the support of infrastructure, technological literacy, and the right policies, AI can be an important innovation that supports physical education teachers in facing the demands of the digital era.

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